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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,319	03/23/2004	Yong-jin Ahn	1293.1278C5	1755
49455	7590	04/04/2006	EXAMINER	
STEIN, MCEWEN & BUI, LLP 1400 EYE STREET, NW SUITE 300 WASHINGTON, DC 20005			CHOW, LIXI	
			ART UNIT	PAPER NUMBER
			2627	

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/806,319	AHN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Lixi Chow	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 12 January 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-17 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____.                                   |

1. Claims 1-17 are pending in this application.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 17 is rejected under 35 U.S.C. 102(e) as being anticipated by Dekker (US Pub. No. 2002/0003762).

Regarding claim 17:

Dekker discloses a method of forming a first state and a second state alternatively and sequentially on an optical recording medium in response to input data having a first level and a second level in an optical recording apparatus (see Figs. 1A-1C and Fig. 3; first state corresponds to the section labeled 13 in Fig. 1A or 1B; and second state corresponds to the section labeled 14 in Fig. 1A or 1B), the method comprising:

generating a recording waveform which includes a first multi-pulse having a plurality of first pulses corresponding to the first level of the input data (Fig. 1A or 1B, section labeled 13 having power level Pw, which corresponds to the first level) and a second multi-pulse having a plurality of second pulses corresponding to the second level of the input data (Fig. 1A or 1B, section labeled 14 having power level Pe, which corresponds to the second level), wherein

one of the first and second states corresponds to a space formed using an erase pattern including the corresponding one of the first and second multi-pulses having a high erase power

and a low erase power for corresponding pulses (see Fig. 1A, the multi-pulses that form the space on the recording medium is shown by ref. #14),

the other one of the first and second states corresponds to a mark formed using a recording pulse including the corresponding other one of the first and second multi-pulses having a high write power and a low write power for corresponding pulses (see Fig. 1A, the multi-pulses that form the mark on the recording medium is shown by ref. #13), and

the low erase power is greater than the low write power (see Fig. 1; power level P1 is the low erase power, and the bottom power level of the write pattern 13 is the low write power), and

the generating of the recording waveform comprises causing a power level of a leading pulse of the erase pattern to be the low erase power (see Fig. 1A, the first pulse of the erase power level is a low erase power level, which is below power level Pe or P1).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3 and 7-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dekker (US Pub. No. 2002/0003762; hereafter Dekker) in view of Ichihara (US 6,396,792).

Regarding claims 1 and 11:

Dekker discloses a method of forming a first state and a second state alternatively and sequentially on an optical recording medium in response to input data having a first level and a second level in an optical recording apparatus (see Figs. 1A-1C and Fig. 3; first state corresponds

to the section labeled 13 in Fig. 1A or 1B; and second state corresponds to the section labeled 14 in Fig. 1A or 1B), the method comprising:

generating a recording waveform which includes a first multi-pulse having a plurality of first pulses corresponding to the first level of the input data (Fig. 1A or 1B, section labeled 13 having power level  $P_w$ , which corresponds to the first level) and a second multi-pulse having a plurality of second pulses corresponding to the second level of the input data (Fig. 1A or 1B, section labeled 14 having power level  $P_e$ , which corresponds to the second level); and/or

generating a recording waveform which comprises a recording pattern corresponding to the first level of the input data (Fig. 1A or 1B, section labeled 13 having power level  $P_w$ , which corresponds to the first level), an erase pattern having a multi-pulse corresponding to the second level of the input data (Fig. 1A or 1B, section labeled 14 having power level  $P_e$ , which corresponds to the second level), and a cooling pulse concatenating the recording and erase patterns (see Fig. 1A or 1B, the off-pulse between the section labeled 13 and 14 is the cooling pulse).

Dekker fails to disclose a leading one of the second pulses (and/or multi-pulse) is set to a low level and a power level of a pulse between an end of the second multi-pulse (and/or multi-pulse) and a first one of the pulses of the first multi-pulse (and/or the recording pattern) is set to a high level. However, Ichihara teaches a method for forming a first state and a second state on an optical recording medium in response to the input data, wherein the power level for the second pulses (erase pattern) are not limited to those shown in the figure, i.e. Fig. 1B(see col. 6, lines 35-44). In addition, Ichihara suggests a plurality of power levels lower than the recording level ( $P_a$ ) are acceptable for setting the erase power level (see col. 6, lines 58-61). Hence, Examiner

maintains that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP § 2144.05(II)(A)).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Dekker, such that the power level of the leading one of the second pulses and the pulse between an end of the second multi-pulse and a first one of the pulses of the first multi-pulse is set in various way as suggested by Ichihara. In particular, it would be obvious for a person with an ordinary skill to have modified the power level of a leading one of the second pulses to a low level and a power level of a pulse between an end of the second multi-pulse and a first one of the pulses of the first multi-pulse to a high level. One would have been motivated to do this, because optimization of erase power level are different among different type of discs and conditions (see Ichihara, col. 11, lines 16-25; one would have to consider the material of the recording layer and the optical property of the laser in order to determine the optimum erase power level); therefore, it would be necessary to provide second multi-pulse in various combination of ranges from routine experimentation, such that optimum power level of the second multi-pulse can be determined in order to ensure the entire area in the width direction of the recording track uniformly passes the temperature zone that promotes the generation of crystal nuclei (see col. 7, lines 1-5).

Regarding claims 2, 3 and 7-10:

Claims 2, 3 and 7-10 are the original claims. Hence, Dekker discloses all the steps that are recited in claims 2, 3 and 7-10 for the reasons set forth in the previous Office Action.

Regarding claims 12-15:

Claims 12-15 recite similar limitations as claims 1 and 11. Hence, the description of the similar limitations met by Dekker is omitted here. In addition to claim 1, Dekker also discloses the leading one of the second pulses is set to be a low level of the multi-pulse (see Fig. 1A).

Dekker fails to disclose a leading one of the second pulses (and/or the multi-pulse) is set to a high level and a power level of a pulse between an end of the second multi-pulse (and/or multi-pulse) and a first one of the pulses of the first multi-pulse (and/or the recording pattern) is set to the high level, and/or a leading one of the second pulses (and/or the multi-pulse) is set to a low level and a power level of a pulse between an end of the second multi-pulse (and/or the multi-pulse) and a first one of the pulses of the first multi-pulse (and/or the recording pattern) is set to the low level. However, Ichihara teaches a method for forming a first state and a second state on an optical recording medium in response to the input data, wherein the power level for the second pulses (erase pattern) are not limited to those shown in the figure, i.e. Fig. 1B(see col. 6, lines 35-44). In addition, Ichihara suggests a plurality of power levels lower than the recording level (Pa) are acceptable for setting the erase power level (see col. 6, lines 58-61). Hence, Examiner maintains that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP § 2144.05(II)(A)).

The motivational statement for claims 12-15 is the same as the one set forth in claim 1 or 11. Hence, refer to either claim 1 or 11 for the statement indicating the obviousness of modifying the apparatus of Dekker in view of Ichihara's teaching.

Regarding claim 16:

Claim 16 recites similar limitations as claim 1. Hence, the description of the similar limitations met by Dekker is omitted here. In addition to claim 1, Dekker also discloses wherein one of the first and second states corresponds to a space formed using an erase pattern including the corresponding one of the first and second multi-pulses having a high erase power and a low erase power for corresponding pulses (see Fig. 1A, the multi-pulses that form the space on the recording medium is shown by ref. #14),

the other one of the first and second states corresponds to a mark formed using a recording pulse including the corresponding other one of the first and second multi-pulses having a high write power and a low write power for corresponding pulses (see Fig. 1A, the multi-pulses that form the mark on the recording medium is shown by ref. #13), and

the low erase power is greater than the low write power (see Fig. 1; power level P1 is the low erase power, and the bottom power level of the write pattern 13 is the low write power).

Dekker fails to disclose the generating of the recording waveform comprises causing a power level of a leading pulse of the erase pattern to be the same erase power as the power level of a trailing pulse of the erase pattern. However, Ichihara teaches an method for forming a first state and a second state on an optical recording medium in response to the input data, wherein the power level for the second pulses (erase pattern) are not limited to those shown in the figure, i.e. Fig. 1B(see col. 6, lines 35-44). In addition, Ichihara suggests a plurality of power levels lower than the recording level (Pa) are acceptable for setting the erase power level (see col. 6, lines 58-61). Hence, Examiner maintains that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP § 2144.05(II)(A)).

The motivational statement for claim 16 is the same as the one set forth in claim 1 or 11. Hence, refer to either claim 1 or 11 for the statement indicating the obviousness of modifying the apparatus of Dekker in view of Ichihara's teaching.

6. Claims 1 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo (US Pub. No. 2002/0101808) in view of Ichihara (US 6,396,792).

Referring to claim 1:

Seo discloses a method of forming a first state and a second state alternatively and sequentially on an optical recording medium in response to input data having a first level and a second level in an optical recording apparatus (see Figs, 6A-6B and paragraph [0019]), the method comprising:

generating a recording waveform which includes a first multi-pulse having a plurality of first pulses corresponding to the first level of the input data and a second multi-pulse having a plurality of second pulses corresponding to the second level of the input data (see Figs. 6A-6B and paragraphs [0052] and [0054], e.g., the first multi-pulse corresponds to AP\_type()=5, and the second multi-pulse corresponds to AP\_type()=4).

Seo fails to disclose a leading one of the second pulses is set to a low level and a power level of a pulse between an end of the second multi-pulse and a first one of the pulses of the first multi-pulse is set to a high level. However, Ichihara teaches a method for forming a first state and a second state on an optical recording medium in response to the input data, wherein the power level for the second pulses (erase pattern) are not limited to those shown in the figure, i.e. Fig. 1B(see col. 6, lines 35-44). In addition, Ichihara suggests a plurality of power levels lower than the recording level (Pa) are acceptable for setting the erase power level (see col. 6, lines 58-

61). Hence, Examiner maintains that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP § 2144.05(II)(A)).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Seo, such that the power level of the leading one of the second pulses and the pulse between an end of the second multi-pulse and a first one of the pulses of the first multi-pulse is set in various way as suggested by Ichihara. In particular, it would be obvious for a person with an ordinary skill to have modified the power level of a leading one of the second pulses to a low level and a power level of a pulse between an end of the second multi-pulse and a first one of the first pulses of the first multi-pulse to a high level. One would have been motivated to do this, because optimization of erase power level are different among different type of discs and conditions (see Ichihara, col. 11, lines 16-25; one would have to consider the material of the recording layer and the optical property of the laser in order to determine the optimum erase power level); therefore, it would be necessary to provide second multi-pulse in various combination of ranges from routine experimentation, such that optimum power level of the second multi-pulse can be determined in order to ensure the entire area in the width direction of the recording track uniformly passes the temperature zone that promotes the generation of crystal nuclei (see col. 7, lines 1-5).

Referring to claim 4:

Seo discloses the method of claim 1, wherein the generating of the recording waveform comprises:

changing the first multi-pulse according to a characteristic of the second pulses of the second multi-pulse (see Fig. 6A, the first pulse of the AP\_type()=5 multi-pulse is changed depending on the previous pulse, which is the second pulse of the AP\_type()=4 multi-pulse).

Referring to claim 5:

Seo discloses the method of claim 4, wherein the second multi-pulse comprises a starting pulse and an ending pulse, and the changing of the first multi-pulse comprises:

changing a start pulse of the first multi-pulse according to a characteristic of one of the starting pulse and the ending pulse of the second multi-pulse (see Fig. 6A, the first pulse of the AP\_type()=5 multi-pulse is changed depending on the previous pulse, which is the ending pulse of the AP\_type()=4 mutli-pulse).

Referring to claim 6:

Seo discloses the method of claim 5, wherein the changing of the start pulse of the first multi-pulse comprises:

changing a voltage level of the starting pulse of the first multi-pulse (see Fig. 6A, the starting pulse of AP\_type()=5 multi-pulse is higher than the reference level).

#### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lixi Chow whose telephone number is 571-272-7571. The examiner can normally be reached on Mon-Fri, 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. L. Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LC 3/29/06

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